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Review of *Polarity in Plants, Annual Plant Reviews, Volume 12*

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POLARITY IN PLANTS. *Annual Plant Reviews, Volume 12.*

Edited by Keith Lindsey. Oxford: Blackwell Publishing; Boca Raton (Florida): CRC Press. $169.95. xiv + 346 p + 1 pl; ill.; index. ISBN: 0–8493–2344–4. 2004.

Polarity is a fundamental property of all cells. The molecular mechanisms that underlies the establishment and maintenance of cellular polarity have been intensively studied in animal cells and yeast-like fungi. These studies reveal an emerging general principle whereby positional information is relayed to the cytoskeleton and other morphogenetic functions by conserved signaling pathways. Comparatively less attention has been directed toward the molecular basis of polarized growth in plant cells and tissues. This volume, *Polarity in Plants*, provides a comprehensive review of the topic that should satisfy both hardcore aficionados of plant cell and developmental biology as well as curious investigators interested in drawing comparisons to animal and fungal systems.

The chapters follow a general progression from the topic of polarity at the cellular level (Chapters 1 to 4) to discussions of polarity and pattern formation during embryogenesis (Chapters 5 and 6) and the development of adult tissues (Chapters 7 through 11). The early chapters emphasize the signaling pathways that locally recruit the cytoskeleton and exocytic pathways to polarization sites, whereas the later chapters highlight the roles of transcriptional feedback loops in the establishment of tissue polarity. Strikingly, the same feedback loops are often used in different developmental contexts. A common theme that resonates throughout the volume is the role of the phytohormone auxin in providing positional information.

Overall, the depth of the individual chapters ranges from general summaries to comprehensive overviews. In most cases, the authors effectively integrate insights obtained using the *Arabidopsis* model with those acquired using less tractable systems such as maize, tomato, and lily. One relatively minor complaint is that some chapters would benefit from the inclusion of more figures. Nevertheless, this book will be an essential resource for plant biologists interested in polarity, as there is no comparable volume that covers the topic in such detail. Moreover, any biologist with an abiding interest in understanding how cell and tissue asymmetries are generated will find this book to be a worthwhile addition to their collection.

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